Barth and Sons, of Nuremberg, we glean some interesting data as to the hop production of the world; this firm also exhibits a diagram of hop-prices from 1798 to 1878. Some samples of hops preserved for two years or more by a process, of which the nature is kept secret, are perfect in aroma and colour. Compression, cold, and exclusion of air are elements of the process but do not suffice to account for its success. The total amount of hops grown in the world in 1878 is stated by Messrs. Barth to be—

	cwts.
England	650,000
Continental Europe	619,000
America	220,000
Total	1,489,000

Many most instructive data as well as specimens, models' and instruments, frequently showing novel applications of scientific principles, may be studied at the Kilburn Show. We had noted for remark the malt-cake exhibited on Stand 586, and the splendid collection of seeds, roots, and models shown by Sutton and Sons of Reading, but the limit of the space at our disposal preclude us from further dwelling upon this exhibition, with its perplexing but most interesting collections.

OUR ASTRONOMICAL COLUMN

THE NEW COMET (SWIFT, JUNE 20).—From observations at Strasburg by Prof. Winnecke on June 21, 26, and July 2, Dr. Küstner, one of his pupils, has computed the following elements of this comet, taking account of all the small corrections:—

Perihelion passage, 1879, April 27·3357 M.T. at Berlin.

	°	′	″	
Longitude of perihelion	42	28	30·8	Mean equinox 1879·0.
,, ascending node ...	45	33	36·6	
Inclination to ecliptic	72	59	52·5	
Log. perihelion distance	9·948935			

Motion—retrograde.

From this orbit it appears that on Tuesday next, July 15, the comet will make an exceedingly close approach to the pole of the equator; at 10h. G.M.T. its calculated position is in right ascension 15h. 20m., and declination 89° 42′, but earlier in the evening its distance from the pole may be little over 10′.

We extract the following positions from an ephemeris for Berlin midnight, communicated by Prof. Winnecke:—

1879.	Right Ascension. h.	m.	s.	North Declination. °	′	Log. distance from Earth.	Log. distance from Sun.
July 11 ...	2	57	59	85	59·2	0·2209	0·1940
12 ..	2	58	6	87	4·8		
13 ...	2	57	40	88	10·3	0·2226	0·2010
14 ...	2	53	50	89	15·6		
15 ...	15	18	0	89	39·2	0·2247	0·2080
16 ...	15	6	32	88	34·3		
17 ..	15	5	33	87	29·6	0·2271	0·2148
18 ...	15	5	36	86	25·0		
19 ...	15	5	56	85	20·7	0·2300	0·2216
20 ...	15	6	25	84	17·0		

TEMPEL'S COMET, 1867 II.—In a letter addressed to *The Observatory*, communicating his observations of this comet made during the present reappearance, at Florence, Dr. Tempel remarks: "Since it will approach Jupiter nearer in the year 1882 than in the year 1870, we shall probably have difficulty in seeing it again, if we ever do so." This statement must rest upon some misconception or error of calculation. The mean daily motion at the perihelion passage in the present year would not differ materially from 593″·18 as fixed by M. Raoul Gautier, and the perihelion passage having taken place about May 6·98 G.M.T., it will appear that when the comet is next in aphelion (which is about the nearest point of approach to the orbit of Jupiter) early in May, 1882, the actual distance between the two bodies is rather more than 0·75 of the earth's mean distance from the sun, though in the actual orbit it might happen that at this point the comet and planet approach within 0·3. Neglecting the effect of perturbation in the interim, it will be found from M. Gautier's elements that the nearest approach of the comet to Jupiter during the next revolution will occur in October 1881, when their mutual distance will be rather less than 0·58. In January 1870, according to Dr. Seeliger's computation this distance was only 0·32. Although, therefore, the perturbations during the ensuing revolution may be very sensible, they will not produce so great an effect upon the elements of 1879 as to bear out Dr. Tempel's statement.

Observations of this comet have been made at the Observatory of Rio de Janeiro, where the comet was found independently by M. Cruls. The Emperor of Brazil, who appears to take a personal interest in the proceedings of his astronomical establishment, has communicated these observations to the Paris Academy of Sciences, of which his Majesty is a Corresponding Member.

THE VARIABLE-STAR PIAZZI XIII. 126.—Mr. Burnham draws attention to an interesting discovery he has made respecting this object, viz., that it is really a close double star, the components of nearly equal magnitude 6·2 and 6·5, at a central distance of 0″·48 on an angle of 80°·4 for 1879·4. Attention was first directed to its variability by Dr. Julius Schmidt, of Athens, in June, 1866. On the 6th of that month he found it 5·4m. more conspicuous than *i* Virginis, with a yellowish white light contrasting with the orange tinge of the latter star. Piazzi estimated it 6·7m. and 7m., not 8m., as given in his Catalogue; Lalande called it 6·7, Brisbane 6, Heis 6·7, and it is 7m. on Bremicker's chart; it is No. 1,342 of Lamont, who estimated it only 8m. It is worthy of note that the star occurs in the Uranometry of Al Sufi, translated by Prof. Schjellerup in 1874; it is No. 19 of the constellation Virgo in the catalogue of the Persian astronomer, and rated 5·6m. As Mr. Burnham remarks, it will be easy to determine which, if only one, of the stars is variable. The star is B.A.C. 4,531 and No. 1,244 of the new Greenwich Nine-Year Catalogue. Its position for 1880·0 is in R.A. 13h. 28m. 18s., N.P.D. 102° 35′·9.

GEOGRAPHICAL NOTES

A PRIVATE letter received at Carlscrona from the commander of the steamer *Vega* reports all on board in good health. The *Vega* left the mouth of the Lena on August 27. At first she made tolerably good progress, although she had to contend with ice and shoals. The voyage was continued to Cape Yakow, but there she was stopped for three days. The steamer got away from there on September 11, and after a difficult passage reached Cape North on the 13th, where she remained beset until the 18th. After that date the steamer could only now and then make progress on account of the ice. On September 28 the expedition attained this present position, which is situated in lat. 67° 6′, long. 173° 30′. If the *Vega* had got there two days earlier she would have reached Behring Straits. The ship is not lying in a harbour, but alongside a very low sandy shore, made fast to the ground ice. Every one was well, and there was a good supply of provisions and enough coal on board to steam 2,000 miles. One or two villages had been passed, the inhabitants of which are Tschutsches. Their complexion is tawny and their hair and eyes are black. They dress in clothes made of reindeer skin, reside in skin tents, and live on seal blubber. They are singularly amiable and obliging; the women have their faces tattooed, but the men have not. Their language is very hard to understand, but

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the explorers have learnt it, and have compiled a Swedish Tschutschisk lexicon of over 300 words. There are three Tschutschisk villages in the neighbourhood of the *Vega.* The temperature in September seldom went down below 3 deg., and the lowest was 5 deg. (Centigrade). On the darkest day of the year, December 21, the sun was above the horizon. The letter was sent off from the *Vega* by a chief who was on a visit, and who lives near Anadyrsk. The explorers expected to get free about July 1, and to reach Japan about August 15.

Major Serpa Pinto, the Portuguese African explorer, of whose journey we gave some account last week, arrived in London on Monday last. We understand that the Royal Geographical Society do not contemplate holding a special meeting in Major Pinto's honour, but that he will be entertained by the Earl of Northbrook, President of the Society, at a private reception on July 16, to which the leading geographers have been invited.

News has arrived at Lisbon that the Portuguese explorers Capello and Ivens, who started with Major Pinto, were on the margin of the river Lucala on April 5, studying the regions crossed by the river Cubango. They had explored the Cubango from its source to the eighth parallel.

The steamer *Jeannette,* with the Arctic Exploring expedition of the *New York Herald,* sailed on Tuesday from San Francisco for the Arctic seas, *viâ* Behring Straits. The commander is Lieut. De Long, and among the scientific staff is Mr. J. J. Collins, who expects to obtain important data in meteorology to the north of Behring Straits. The detailed plans of the expedition are purposely kept secret.

In the current number of the *Church Missionary Intelligencer* we find an interesting account, by the Rev. C. T. Wilson, of his voyage across the Victoria Nyanza, from Uganda to Kagei, in the course of which he was able to make some important additions to our knowledge of the geography of the large group of islands at the north-western corner of the lake. He proved conclusively that Mr. Stanley is in error in placing one large island there, to which he gives the name of Sesse, as in reality there are about 150 islands. Passing down the western coast, Mr. Wilson came to the Kagera, or Kitangule River, the Alexandra Nile of Stanley. South of this, he says, the scenery underwent a great change. Previously the shore had been low, clothed with dense forest, and often fringed with beds of papyrus, while to the south the country consisted of high downs, ending in abrupt precipices, 300 or 400 feet high, which sometimes descended sheer down into the lake, and at others had a low strip of alluvial land at their base, dotted with villages. The geological formation also changed. North of the Kagera the rocks were mostly a hard conglomerate, the matrix being clay iron ore, in which quartzose pebbles were imbedded, but on the south they were clay slate, with red sandstone, the strata being inclined in a westerly direction at an angle of about 15°. Besides occasional descriptions of the country and scenery, Mr. Wilson's journal contains some interesting notes on natural history and on the customs of the people.

Mr. Sanford Fleming, C.M.G., the engineer-in-chief, has just issued his annual report in reference to the Canadian Pacific Railway, illustrated by an interesting map of the prairie region. Mr. Fleming has endeavoured to collect all known information respecting the country within the limits of the prairie region, and, to make it easy of reference, the whole region has been subdivided into blocks, bounded by each separate parallel of latitude and longitude; the descriptions of scientific travellers and all available statements made on reliable authority are placed side by side. Much still remains to be discovered respecting large tracts of country, and Mr. Fleming suggests that the information should be obtained during the present season by careful explorations of the sections where our knowledge is deficient. On the map an attempt has been made to indicate generally the character of the soil, separating that of more or less value from tracts which are comparatively worthless.

In the fifteenth part of the great map of Switzerland recently published at Berne, the following sheets will be found useful by English tourists in the coming season:—No. 263, Glarus; 367, Wimmis; 429, St. Maria, and 429 *bis*, Stilfser Joch (giving the Swiss portion of the Stelvio); and 526, Martigny, 529, Orsières, and 532, Grand St. Bernard (giving the whole of the Swiss side of the St. Bernard Pass). The present issue is in no respect inferior to the earlier ones, which, we have frequently pointed out, have been remarkable for their uniform excellence. When all the sheets are published, and this will occur in about twelve years' time if the present rate of issue is maintained, Switzerland will be able to boast of a map of a far higher and more useful order than is possessed by any other country in the world.

M. de Lesseps gave a long address at the last sitting of the Paris Geographical Society on the Panama Canal. He announced that he had entered into a contract with the Société d'Études for purchasing their rights so as to have the whole of the affair in his own hands. He stated that he had paid a deposit of 80,000*l.* to the Venezuelan Government, and his intention was to establish a public subscription of 16,000,000*l.* He thought that sum should be sufficient with the sale of land conceded by the local government, and that the canal should be finished in less than eight years. In his speech M. de Lesseps narrated a circumstance quite unknown of the career of Napoleon III. When he was a prisoner in Ham he sent one of his friends to survey the canal by Nicaragua. He was so well satisfied with the results of the inspection that he wrote a petition to the Government asking to be liberated from his life confinement, in order to devote his activity to the establishment of this great work, pledging his word of honour that he should no more meddle with politics. The petition was left unanswered. He was ready to go to Nicaragua in order to execute his long-cherished scheme, when the Revolution of 1848 broke out and changed his plans.

The New York *Nation* records with great satisfaction the formal presentation to the U.S. Government of the invaluable collection of Indian portraits and curiosities made by the late George Catlin. This collection was, a generation ago, one of the standing attractions of London, was afterwards exhibited in Belgium, and there fell into the hands of the late Joseph Harrison, Jun., of Philadelphia, who not only helped Mr. Catlin out of his financial straits by the purchase, but intentionally preserved for his country this most remarkable record of the American aborigines. His widow has now offered it to the National Museum, where it will be duly displayed.

M. de Brazza, the explorer of the Ogowé, and gold medallist of the French Geographical Society, has been summoned to Rome, where he received from the Italian Geographical Society another gold medal for his exploring work. M. de Brazza is an Italian by birth, having become French by naturalisation.

The new *Bulletin* of the Antwerp Geographical Society contains a geographical sketch of Afghanistan, accompanied by a map, by Lieut.-Col. Adan, who appears to be the mainstay of both the Belgian societies.

The telegraph line between Tientsin and Taku, in Northern China, was completed on May 8.

The Japanese Government intend to connect the Loo-choo Islands with Japan by a submarine telegraph cable to Kagoshima.

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